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UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/501,078	02/09/2000	Amon Netzer	180/01261	3371

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EXAMINER
WON, MICHAEL YOUNG

ART UNIT	PAPER NUMBER
2155	

DATE MAILED: 01/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
	09/501,078	NETZER ET AL.
Supplemental Office Action Summary	Examiner	Art Unit	
	Michael Y Won	2155	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>09 September 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>7-11,13,31-33 and 35-57</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>7-11,13,31-33,35-54 and 57</u> is/are rejected.

7)☒ Claim(s) <u>55 and 56</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
     Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   This office action is in response to the arguments presented in the amendment

filed September 9, 2004.

2.   Claims 10 and 44 have been amended and new claims 55-57 have been added.

3.   Claims 7-11, 13, 31-33 and 35-57 have been examined and are pending with this

action.

4.   The objection to claim 44 in the previous office action has been rescinded.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 7-11, 13, 31-33, 35-37, 39, 40, 42-45, 47-49, 51-54 and 57 are rejected

under 35 U.S.C. 103(a) as being unpatentable over Oba et al. (US 6,262,986 B1) in

view of Adas et al. (US 6,614,794 B1).

INDEPENDENT:

As per claims 31 and 52, Oba teaches a method of scheduling the handling of a plurality of connections, comprising: accumulating data (see abstract: "plurality of packet queues for temporarily storing entered data") from a plurality of connections (see col.1, lines 54), requiring handling in each cycle of a respective cycle scheme of the connection (see col.1, lines 19-23); determining quality of service levels of a plurality of the connections (see col.1, lines 23-25 and col.5, lines 18-19); and scheduling the processor to process data from the plurality of connections in an order determined or adjusted responsive to relative values or responsive to the changes (see Fig.11A and col.15, lines 9-19) of the determined quality of service levels (see col.1, lines 40-55; col.3, lines 52-60; col.5, lines 34-48; and col.17, lines 36-43).

Oba does not explicitly teach of a remote access server. Adas teaches of a remote access server (see Fig.1, #16 and col.4, lines 19-23). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the teachings of Adas within the system of Oba by implementing a remote access server to perform the handing of connections within the method of scheduling the handling of a plurality of connections because Adas teaches that remote access servers are employed in an ATM system (see col.1, lines 49-60) and since Oba teaches of a packet scheduling method within an ATM network (see col.1, lines 8-11), one of ordinary skill in the art would implement RAS in ATM.

As per claim 47, Oba teaches of a server (see Fig.1, #11), comprising: a plurality of channel drivers (implicit: see col.3, lines 50-52) which accumulate data from

respective channels (see abstract: "plurality of packet queues for temporarily storing

entered data" and col.5, lines 16-26); a processor which handles the accumulated data

(see Fig.3, #31 and col.7, lines 52-53); and a scheduler (see Fig.1) which determines

for at least one of the channels a quality of service level (see col.1, lines 23-25) and

schedules the processor to handle data of the channels in an order determined

according to the determined quality of service level (see col.1, lines 40-55; col.3, lines

52-60; col.5, lines 34-48; and col.17, lines 36-43).

Oba does not explicitly teach of a remote access server. Adas teaches of a

remote access server (see Fig.1, #16 and col.4, lines 19-23). It would have been

obvious to a person of ordinary skill in the art at the time the invention was made to

employ the teachings of Adas within the system of Oba by implementing a remote

access server within the method of scheduling the handling of a plurality of connections

because Adas teaches that remote access servers are employed in an ATM system

(see col.1, lines 49-60) and since Oba teaches of a packet scheduling method within an

ATM network (see col.1, lines 8-11), one of ordinary skill in the art would implement

RAS in ATM.

As per claim 57, Oba teaches a method of scheduling the handling of a plurality

of connections, comprising: accumulating data (see abstract: "plurality of packet queues

for temporarily storing entered data") from a plurality of connections (see col.1, lines

54), requiring handling in each cycle of a respective cycle scheme of the connection

(see col.1, lines 19-23); determining for at least one of the connections a quality of

service level (see col.1, lines 23-25 and col.5, lines 18-19); scheduling the processor to

process data from the plurality of connections in a first order determined responsive to the determined quality of service level (see col.1, lines 40-55; col.3, lines 52-60; col.5, lines 34-48; and col.17, lines 36-43); changing the quality of service level of at least one of the connections (see col.15, lines 9-19); and scheduling the processor to process data from the plurality of connections in a second order adjusted responsive to the quality of service level (see col.17, line 64 to col.18, line 2).

Oba does not explicitly teach of a remote access server. Adas teaches of a remote access server (see Fig.1, #16 and col.4, lines 19-23). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the teachings of Adas within the system of Oba by implementing a remote access server to perform the handing of connections within the method of scheduling the handling of a plurality of connections because Adas teaches that remote access servers are employed in an ATM system (see col.1, lines 49-60) and since Oba teaches of a packet scheduling method within an ATM network (see col.1, lines 8-11), one of ordinary skill in the art would implement RAS in ATM.

DEPENDENT:

As per claim 7, Oba further teaches wherein the scheduling comprises scheduling the processor to handle the accumulated data from a first one of the connections at least twice before scheduling the processor to handle data from a second one of the connection (implicit: see col.6, lines 1-52, if the normalized queue length (Lmin) of the second one of the connection is not greater than the weight of the

accumulated data of the first one of the accumulated data after handling the first, then the first will be handle again).

As per claim 8, Oba further teaches wherein scheduling the processor to handle the accumulated data comprises allowing the: processor to utilize up to a predetermined amount of processing time for each connection (see col.3, lines 41-46).

As per claim 9, Oba does not explicitly teach wherein the processor runs an operating system which performs preemption, therefore, it is implicit that the processor does not run an operating system, which performs preemption.

As per claim 10, Oba further teaches wherein scheduling the processor comprises having the processor wait without handling data from any of the connections (implicit: see col.5, lines 14-22 & 36-41: the packet input unit handles all the incoming packets and inputs to the scheduler "a VCI as the scheduling information for specifying and order to read out the packet") if all the connections were scheduled for handling during their respective current cycles (see abstract: last sentence and col.14, lines 7-10), although one or more of the connections has data requiring connection (inherent).

As per claim 11, Oba teach of further comprising measuring the waiting time of the processor in a first cycle and using the measured waiting time in determining whether to accept handling data from an additional connections (implicit: see col.21, lines 49-54).

As per claim 13, Oba teaches of further comprising processing an entire block of accumulated data of the scheduled connection responsive to the scheduling (see col.6, lines 46-52).

As per claim 32, Oba further teaches wherein the scheduling comprises scheduling the processor to handle data from at least one first connection before handling data from at least one second connection having a lower quality of service level than the at least one first (implicit: see col.1, lines 41-55).

As per claims 33 and 49, Oba teaches of further comprising changing the quality of service level of at least one of the connections while accumulating the data and changing the order of scheduling responsive to the change in the quality of service level (see claim 52 rejection above and col.17, line 64 to col.18, line 2).

As per claim 35, Oba further teaches wherein the plurality of connections connects to the remote access server through separate physical links (see Fig.10 and col.5, lines 18-19).

As per claim 36, Oba further teaches wherein the processing time of a connection does not affect the connection operation, provided the connection is processed within its respective cycle (see col.3, lines 42-46).

As per claim 37, Oba further teaches wherein at least two of the plurality of connections has same cycle times beginning concurrently (see claim 7 rejection above).

As per claim 39, Oba further teaches wherein the processor handles the data of each connection it is assigned, without interruption for handling data of a different connection (implicit: see col.5, lines 34-35).

As per claim 40, Oba further teaches wherein scheduling the processor comprises scheduling each connection once during each of its respective cycles (see col.14, lines 7-10).

As per claim 42, Oba teach wherein scheduling the processor comprises scheduling in an order determined responsive to the time remaining until the end of the respective cycle of each of the connections (implicit: see col.14, lines 7-10).

As per claim 43, Oba further teaches wherein scheduling the processor comprises scheduling in an order determined responsive to the relative values of the quality of service levels when the time remaining until the end of the respective cycle is substantially the same for a plurality of connections (implicit: see col.1, lines 41-55 and col.17, lines 39-43).

As per claim 44, Oba further teaches wherein scheduling the processor comprises scheduling a connection waiting a longest time for processing, when a plurality of connections are otherwise with equal right for processing (see col.6, lines 38-52).

As per claims 45 and 53, Oba further teaches wherein scheduling the processor comprises giving precedence to connections having a high quality of service level (implicit: see col.1, lines 41-55).

As per claim 48, Oba further teaches wherein the plurality of channel drivers accumulates data from respective separate physical links (see Fig.10).

As per claim 51, Oba further teaches wherein the scheduler schedules the processor (implicit) to handle data of the channels in an order determined according to the relative quality of service levels of the channels (implicit: see col.1, lines 41-55).

As per claim 54, Oba further teaches wherein determining a quality of service level comprises determining for each of the connections (see col.1, lines 19-25).

6.   Claims 38 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Oba et al. (US 6,262,986 B1) and Adas et al. (US 6,614,794 B1), and further in

view of Shtayer et al. (US 5,491,691 A).

As per claim 38, Oba and Adas do not explicitly teach wherein at least two of the

plurality of connections has different cycle times. Shtayer teaches of two of the plurality

of connections has different cycle times (see Fig.3, and col.1, lines 20-23). It would

have been obvious to a person of ordinary skill in the art at the time the invention was

made to employ the teachings of Shtayer within the system of Oba and Adas by

implementing connections having different cycle times within the method of scheduling

the handling of a plurality of connections because Oba teaches that each packet queue

corresponds "to different virtual connections, different VC connections, different traffic

classes, different VP connections, different output links, or a combination of any two or

more of these (see col.5, lines 27-31). Therefore, one of ordinary skill in the art will

conclude that these variations of two or more connections are not required to carry the

same cycle time because Oba does not teach such limitation.

As per claim 41, Oba and Adas do not explicitly teach of further comprising

changing the cycle time of at least one of the connections, during its operation. Shtayer

teaches of changing the cycle time of at least one of the connections, during its

operation (see Fig.4; col.2, lines 12-16; and col.3, lines 37-41: "multiplexing"). It would

have been obvious to a person of ordinary skill in the art at the time the invention was

made to employ the teachings of Shtayer within the system of Oba and Adas by

changing the cycle time of at least one of the connections during operation within the

method of scheduling the handling of a plurality of connections because Shtayer

teaches that multiplexing cells from multiple inputs into a single outputs (in large

distance transmission) without compromising required bandwidth and transmit criterion

(see col.1, lines 15-25) is efficient and economical.

7.   Claims 46 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Oba et al. (US 6262986 B1) and Adas et al. (US 6,614,794 B1), and further in view

of Eng et al. (US 5,751,708 A).

        As per claim 46 and 50, Oba and Adas do not further teach wherein determining

the quality of service levels comprises accessing a table listing the quality of service

level for each connection.   Eng teaches wherein determining the quality of service

levels comprises accessing a table listing the quality of service level for each connection

(see Fig.2). It would have been obvious to a person of ordinary skill in the art at the

time the invention was made to employ the teachings of Eng within the system of Oba

and Adas by implementing the use of tables for determining the QOS levels for each

connection within the method of scheduling the handling of a plurality of connections

because tables provides Oba teaches that VCI memory can be implemented as a linked

list (see col.7, lines 60-64), therefore by providing a table or list for the VCI and the

QOS, the data or information to be employed for scheduling could be searched at the

same location providing for faster schedule processing.

Allowable Subject Matter

8.   Claims 55 and 56 are objected to as being dependent upon a rejected base

claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

        Prior art of record Oba et al. (US 6,262,986 B1), Adas et al. (US 6,614,794 B1),

Shtayer et al. (US 5,491,691 A) and Eng et al. (US 5,751,708 A) do not explicitly

disclose, teach or suggest wherein scheduling the processor to process data from

comprises scheduling in two stages comprising: a first stage including determining

possible scheduling options at least partially responsive to the respective cycle

schemes of the connections, but without relation to the determined quality of service

levels; and a second stage, following the first stage, including determining a scheduling

order responsive to the determined possible scheduling options at least partially

responsive to relative values of the determined quality of service levels, as recited in

claim 55.

        Prior art of record Oba et al. (US 6,262,986 B1), Adas et al. (US 6,614,794 B1),

Shtayer et al. (US 5,491,691 A) and Eng et al. (US 5,751,708 A) do not explicitly

disclose, teach or suggest wherein the scheduler determines for a plurality of the

channels a quality of service level, determines one or more possible scheduling options

of the plurality of connections responsive to the respective cycle schemes of the

connections and schedules the processor to handle data of the channels in accordance

with one of the determined possible scheduling options, selected according to the

determined quality of service levels, as recited in claim 56.

Response to Arguments

9.   In response to the arguments regarding claims 31, 47, 52 and 57, a new ground

of rejection has been presented. The applicant(s) have argued that since the reference

number 11, in Fig.1 of Oba is labeled "Packet Scheduling Apparatus" instead of a

remote access server as recited in the claim language, that such an apparatus is "totally

different from a RAS". If RAS is well defined in the art as argued, then the functionality

of the element claimed is either well known (limitations are inherent) or there is a

claimed improvement thereupon. In the latter case, the improved device can be labeled

whatever the inventor chooses (his or her own lexicographer). Although the term may

be different, the functionality with respect to the claimed language is clearly taught by

Oba. Nonetheless, a new reference and rejection has been provided to explicitly teach

the claimed invention.

In response to applicant's argument that the references fail to show certain

features of applicant's invention, it is noted that the features upon which applicant relies

(i.e., scheduling software-processes") are not recited in the rejected claim(s). Although

the claims are interpreted in light of the specification, limitations from the specification

are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057

(Fed. Cir. 1993).

In response to the argument regarding claim 36, Oba clearly teaches this limitation. Oba teaches in col.3, lines 42-46, that the processing time required for scheduling is made constant regardless of the number of connections, therefore, whether there is 1 or 100 connections, the processing time of the 1 or 100 connections remains constant.

In response to the argument regarding claim 42, Oba clearly teaches this limitation. Oba teaches in col.14, lines 7-10, that at each cycle, each scheduling apparatus outputs on cell from the buffer, there it is implicit that scheduling is responsive to each cycle (time) of each of the connections.

In response to the argument regarding claim 43, Oba clearly teaches this limitation. Oba teaches in col.1, lines 41-55 and col.17, lines 39-43, of quality of service and a need to "guarantee the QOS for a connection". Therefore, it is implicit that the scheduling system would specify "an order to read out packets stored in the packet queues, according to a queue length of each packet queue and the weight set up for each packet queue" (see abstract), wherein the weight inherently is determined according to the QOS and other factors.

In response to the argument regarding the amended claim 10, the "one or more of the connections has data requiring connection" is clearly inherent and does not limit the claimed invention. Any request is requiring connection.

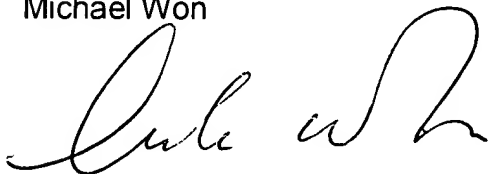In response to the newly entered claims 55-57, see rejection above.

10.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Y Won whose telephone number is 571-272-3993. The examiner can normally be reached on M-Th: 7AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain T Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Won

December 16, 2004

HOSAIN ALAM
SUPERVISORY PATENT EXAMINER